

АННОТАЦИИ. КЛЮЧЕВЫЕ СЛОВА. БИБЛИОГРАФИЯ

Писаренко П.В. Оценка и прогнозирование ресурсно-экологической безопасности в контексте устойчивого развития регионов Украины / **П.В. Писаренко, М.С. Самойлик, Л.А. Колесникова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 5–10.

Предложены методологические основы, включающие адаптивную модель оценки и прогнозирования состояния ресурсно-экологической безопасности с помощью оперирования методами таксономического анализа и главных компонент, индикативного управления, определения факторных нагрузок, которые больше всего влияют на безопасность, и систему поддержки принятия решений для реализации оптимального управления, реализация которых позволяет выявить особенности и тенденции развития данной сферы. Практическое применение разработанного подхода возможно в рамках программно-целевого метода управления при разработке и реализации государственных программ, направленных на повышение устойчивости как ресурсно-экологической безопасности государства от внутренних и внешних рисков и угроз.

Ключевые слова: ресурсно-экологическая безопасность, государственное прогнозирование, программно-целевой подход, устойчивое развитие регионов.

Физико-механические свойства зерна различных сортов и линий пшениц / **Г.Н. Господаренко, В.В. Любич, И.О. Полянецкая, Н.В. Воробйова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 11–18.

Представлены результаты изучения линейных размеров зерновок, параметры бороздки, ширины её петли, геометрической характеристики и физических свойств зерна разных сортов и линий пшеницы мягкой, пшеницы компактной, пшеницы эфиопской. Самые распространенные – удлинённая и овальная формы зерновок. Показано, что линейные размеры, объём зерновки, её сферичность, плотность зерна с порами и без пор меняются и зависят от сорта и линии пшеницы. Лучше обеспечено воздухом зерно сорта Вдала и линии LPP 2793.

Ключевые слова: пшеница мягкая, пшеница компактная, пшеница эфиопская, линейные размеры, физико-механические свойства, бороздка.

Зверковский В.Н. Металлы в системе “технозем – *Robinia pseudoacacia* L.” в рекультивационных насаждениях Степи Украины / **В.Н. Зверковский, С.А. Сытник** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 19–22.

Исследовано содержание неорганических контаннантов-металлов *Sb, Pb, Cd, As, Ni, Cr* в древесине и коре ствола, листьях и плодах *Robinia pseudoacacia* L. произрастающей в составе рекультивационного насаждения на тех-

нозёме угольных шахтных отвалов. В субстрате выращивания робинии установлено превышение значений ПДК химических веществ почвы. Максимальные концентрации практически всех исследуемых металлов зафиксированы в листьях. Самой высокой концентрации достигал Никель. Согласно значениям коэффициентов биологической аккумуляции, все исследуемые металлы принадлежат к элементам слабого накопления, наименее в надземной фитомассе депонируются Арсениум и Никель.

Ключевые слова: надземная фитомасса, робиния ложноакациевая, неорганические контаннанты-металлы, рекультивация.

Цилюрик А.И. Влияние мульчирующей обработки почвы на питательный режим чернозема в посевах ячменя ярового / **А.И. Цилюрик** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 23–31.

Исследованиями установлено, что при использовании отвальной вспашки наблюдается устойчивая тенденция к повышению нитрификационной способности чернозема обыкновенного в сравнении с мелкой мульчирующей обработкой (чизелевание, дискование) почвы и увеличение содержания азота нитратов на 3–4 мг/кг. Фосфатный и калийный режимы чернозема при чизелевании и отвальной вспашке были практически одинаковым за исключением дискования, где отмечено снижение содержания фосфора и калия вследствие ухудшения микробиологической активности почвы, аэрации и минерализации растительного субстрата. Применение отвальной вспашки и чизелевания обеспечивает получение практически равноценного урожая зерна ячменя: 2,69–3,35 и 2,35–3,32 т/га, соответственно. Дискование почвы снижает урожайность ячменя ярового на 5,9–17,8 % за счет иммобилизации азота микроорганизмами при разложении растительных остатков.

Ключевые слова: ячмень яровой, обработка почвы, минеральные удобрения, питательный режим, пожнивные остатки, урожайность зерна, экономическая эффективность.

Бойко М.В. Энтомопатогенные бактерии *Bacillus thuringiensis* и их потенциал в биоконтроле насекомых / **М.В. Бойко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 32–35. Представлены данные о полифункциональных свойствах бактериальных штаммов природного типа *B. thuringiensis* var. *thuringiensis* с энтомотоксическими и антифидантными эффектами относительно личинок колорадского жука (*Leptinotarsa decemlineata* Say). Изучена эффективность действия штамма *Bacillus thuringiensis* 87/3 в условиях лабораторных и полевых опытов с использованием в качестве биотеста личинки колорадского жука младшего возраста (L₁₋₂). Показано, что аксеничная культура штамма *B. thuringiensis* № 87/3 по селекции *in vitro*

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обладает высоким потенциалом технологичности (титр метаболитного споро-кристаллического комплекса составляет 3,0 до 4,7 млрд/мл культуральной жидкости), энтомоцидности (96,0–99,0 %).

Ключевые слова: *B. thuringiensis* var. *thuringiensis*, споро-кристаллический комплекс, энтомотоксическое действие, антифидантный эффект.

Бунчак А.М. Особенности формирования урожая сои с содержанием Cr^{+3} в зависимости от применения органических удобрений, изготовленных по новейшим технологиям / **А.М. Бунчак** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 36–39.

Определено, что самая высокая урожайность сои (в среднем 3,06 т/га) с содержанием в зерне 1,125 мг/кг Cr^{+3} получена в варианте с внесением под основную обработку почвы 10 т/га органического удобрения “Биопродерм” и опрыскиванием растений при вегетации жидким органическим удобрением “Биохром” в дозе 5 л/га. То есть исследуемые факторы влияют на агрофизические и агрохимические свойства почвы, рост и развитие растений, увеличивают урожайность на 62,4–69,1 % и обеспечивают получение экологически чистой продукции с содержанием необходимого количества трехвалентного хрома, а также качественных показателей зерна сои.

Ключевые слова: соя, органические удобрения “Биопродерм”, “Биохром”, регуляторы роста, трехвалентный хром, урожайность.

Сендецкий В.Н. Влияние регуляторов роста на рост, развитие и формирование урожайности растений подсолнечника / **В.Н. Сендецкий** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 40–43.

Рассмотрены результаты исследований, проведенных на дерново-подзолистой среднесуглинистой почве по изучению влияния регуляторов роста растений Вермиаг, Вермийодис на урожайность подсолнечника гибрида НР Брио в условиях Лесостепи Западной. Установлено, что изучаемые регуляторы роста при предпосевной обработке семян и одно- и двукратного опрыскивания растений в период вегетации на всех этапах ортогенеза способствовали улучшению их роста, развитию и формированию урожайности семян подсолнечника.

Ключевые слова: подсолнечник, регуляторы роста растений Вермиаг, Вермийодис, формирование урожайности, эффективность.

Дерново-аллювиальные почвы поймы р. Днепр в пределах природного заповедника “Днепро-Орельский”: морфология и профильное распределение физических свойств / **Жуков А.В., Задорожная Г.А., Коцун В.И., Мизин М.С.** // Вісник Дніпропетровського державного аграрно-

економічного університету. – 2017. – № 3(45). – С. 44–55.

В пойме р. Днепр 8 июня 2017 г. заложены два разреза в прирусловой дубраве. Разрез № 1 находится в 3 м от русла протоки р. Днепр на самой высокой части прируслового вала. Разрез № 2 заложен вдоль русла реки в 45 м от разреза № 1 и в 20 м от русла, на склоне прируслового вала. Описанные почвы диагностированы как аллювиальные дерновые лесные слоистые нормальные и короткопрофильные почвы. Профильное варьирование электропроводности, влажности, плотности и твердости почвы указывает на то, что в исследованных едафотобах экологические режимы не выходят за критические пределы, способны ограничивать существования большинства жителей земли. Профильное распределение твердости можно охарактеризовать как сочетание типов регрессивно-элювиального – верхняя и прогрессивно-элювиального – нижняя части почвы. Исследованные физические характеристики отличаются согласованной динамикой профильного распределения. Такие физические показатели, как влажность и плотность на фоне учета глубины горизонта способны статистически достоверно объяснить 87 % варьирования твердости профилем исследованных почв. Наблюдаемое профильное распределение почвенных признаков представляет собой суперпозицию нескольких специфических паттернов, которые обусловлены особенностями генезиса почвы.

Ключевые слова: морфология почв, аллювиальные почвы, пойма, физические свойства, твердость почвы, электропроводность почвы.

Шкурко Т.П. Оценка молочной продуктивности первотелок голштинской породы по гену каппа-казеин / **Т.П. Шкурко, О.І. Іванов, І.А. Іванов** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 56–59.

Установлено, что первотелки-трансплантаты превышают аналогов по показателям молочной продуктивности с высокодостоверной разницей ($P < 0,001$), а это свидетельствует о существенных отличиях в генетическом потенциале животных опытной и контрольной групп за счет высокопродуктивных матерей-доноров. Наличие В-алеля в гетерозиготных генотипах телок, в сравнении с АА-генотипами, дает возможность прогнозировать увеличение содержания белка и улучшение сыропригодности молока, что позволит эффективно использовать генетические ресурсы по гену каппа-казеин в селекционном процессе.

Ключевые слова: первотелки-трансплантаты, каппа-казеин, молочная продуктивность, сыропригодность молока.

Васильева О.А. Аспекты развития козоводства, как современного направления экологического производства в животноводческой отрасли

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/ **О.А. Васильева, Е.Н. Бондаренко** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 60–63.

Проведен сравнительный анализ работы частного предприятия и фермерского хозяйства по производству продукции козоводства. Установлено, что в современных условиях развития сферы экологического агропромышленного производства в контексте расширения ассортимента и повышения биологической ценности животноводческой продукции в условиях Украины актуальным остается развитие козоводства. Утверждается, что при минимальных затратах можно получить практически безотходное производство высокоценной продукции с достаточным высоким уровнем рентабельности.

Ключевые слова: козоводство, породы, продуктивность, органические продукты, уникальность состава молока, зааненские козы.

Миронов А.С. Оперативное определение теплофизических параметров почвы в течение дня / **А.С. Миронов, Е.В. Золотовская** / Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(46). – С. 64–67. Приведены результаты исследований накопления влаги в почве с использованием прибора для измерения температур почвы. Получена модель накопления влаги, проведено определение температур на поверхности и в глубине почвы, построен суточный график оперативного замера температур, характеризующих в определенное время влажность почвы. Использование предлагаемой технологии измерения температур позволяет оперативно принимать решения по обработке почвы, управлять формированием урожая сельскохозяйственных культур.

Ключевые слова: модель накопления влаги, температура почвы, конденсация, время замера температуры, разница температур Δ .

Стремоухов А.Б. Обоснование конструктивной схемы подачи природного газа для автотракторных газодизелей / **А.Б. Стремоухов** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(46). – С. 68–72.

Проведен анализ устройств для подачи газа в двигатели внутреннего сгорания ведущих фирм, выявлены преимущества, недостатки и перспективы применения рассмотренных устройств. Изучена конструктивная схема системы всережимного регулирования газодизеля, разработанная в ДГАСУ, предложен способ усовершенствования этой системы для повышения точности регулирования на корректорном участке внешней скоростной характеристики. Обоснована необходимость применения газовых форсунок с электронным управлением и распределенным впрыском газа. Показана принципиальная возможность корректирования цикловой подачи газа и на корректорном участке характеристики, и на режимах холостого хода.

Ключевые слова: газодизель, система подачи газа, система регулирования газодизеля, газовые форсунки, всережимное регулирование.

Брыжатый И.Ю. Экспериментальные исследования работы сферического диска на упругом стояке / **И.Ю. Брыжатый** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(46). – С. 73–76.

Приведены результаты полевых исследований сферического диска на упругом стояке по проверке ряда рабочих гипотез о механизмах возбуждения колебаний и рациональном направлении суммарного вектора их действия. Рабочая гипотеза состоит в том, что колебания в системе упругий стояк-диск возникают за счет периодического изменения тягового сопротивления. В общем виде тяговое сопротивление имеет две составляющие – постоянную и переменную. Номинальная, постоянно действующая составляющая, формируется в условиях стабильности выходных параметров (механико-технологических свойств) почвы. Переменная возникает при случайном или циклическом изменении этих параметров и условно разделена нами на два вида: вариационная составляющая – носит циклический характер и подчиняется определенному закону распределения, а также случайная импульсная составляющая. Обосновано рациональное направление действия результирующей силы – ее вектор должен лежать в плоскости вращения лезвия диска.

Ключевые слова: дискатор, упругий стояк, виброударное действие, сферический диск, площадь вращения, составляющие сопротивления, резонанс.

Зажарская Н.Н. Параметры субклинического мастита у коз / **Н.Н. Зажарская, Н.Ю. Неверковец, В.О. Данилюк** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 77–81.

Установлены параметры обнаружения субклинического мастита у коз. Исследованы пробы молока от 27 коз. Выявлено, что с увеличением содержания хлоридов в козьем молоке увеличивается и бактериальное загрязнение молока, но статистической разницы не зафиксировано. Совокупность таких показателей, как содержание хлоридов >300 мг%, количество соматических клеток >2 млн/мл, хлорсахарное число 7 и выше, положительная проба отстаивания может служить критерием выявления субклинического мастита у коз.

Ключевые слова: козье молоко, субклинический мастит, соматические клетки, содержание хлоридов, хлорсахарное число, электропроводность, проба отстаивания, бактериальное обсеменение.

Мазуркевич А.И. Мастит – актуальная проблема молочного стада / **А.И. Мазуркевич, А.В.**

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Гришук, И.А. Гришук // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 82–84.

Приведены результаты исследования качественных показателей молока от здоровых и больных маститом коров. Полученные данные свидетельствуют о том, что уровень жира в молоке коров больных маститом на 25 % ниже, чем у здоровых животных. Уровень сухого вещества на 24 %, плотность на 10 %, а содержание белка снижены на 12 % у больных маститом коров. По результатам изучения культуральных и биохимических свойств выделенных микроорганизмов в молоке коров, больных маститом, возбудитель отнесен к патогенному грампозитивному стрептококку. **Ключевые слова:** коровы, молоко, мастит, диагностика, патогенный грампозитивный стрептококк.

Эффективность комплексного применения иммуномодулятора Авесстим™ и витамина Евитсел в условиях хозяйства по разведению индюков / **А.А. Фотина, Т.И. Фотина, Г.С. Вижевский, А.И. Фотин** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 85–88.

Приведены данные о влиянии иммуномодулятора Авесстим™ и витамина Евитсел на морфологические, биохимические и иммунологические показатели крови, на физиологический статус организма подопытных индюков. Показано, что у птицы 210-суточного возраста повышается количество эритроцитов в крови на 2,8–9,7 % в сравнении с аналогами контрольной группы. Подобная картина наблюдалась и в содержании гемоглобина. Доказано синергическое взаимодействие иммуностимулятора Авесстим™ и витамина Евитсел. Применение иммуностимулятора и витамина повышает окислительно-восстановительные реакции организма индеек, что в итоге способствует интенсивности роста.

Ключевые слова: иммуномодулятор Авесстим™, витамин Евитсел, индюки, эритроциты, гемоглобин, лейкоциты.

Грибан В.Г. Концентрация продуктов перекисидации и активность антиоксидантной системы у коров 5–6-летнего возраста под влиянием Гумилида и Селена / **В.Г. Грибан, Д.Ф. Милостивая, Е.А. Печень** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 89–92.

Исследовано влияние биологически активных соединений – гуминового препарата Гумилида и Селена, – как по отдельности, так и в сочетании, на активность энзимов защитной антиоксидантной системы (каталазы, глутатионпероксидазы, глутатионредуктазы) и уровень концентрации продуктов перекисного окисления липидов – диеновых конъюгатов и малонового диальдегида в крови коров 5–6-летнего возраста украинской мясной породы. Выявлено, что с применением

Гумилида и селенита натрия уровень продуктов перекисного окисления липидов снижается за счет повышения активности антиоксидантных ферментов.

Ключевые слова: коровы, антиоксидантные ферменты, глутатионпероксидаза, глутатионредуктаза, каталаза, продукты перекисидации липидов, малоновый диальдегид, диеновые конъюгаты.

Проблемы использования методов клеточной регенеративной терапии у ветеринарной клинической практике / **А.И. Мазуркевич, Н.А. Малик, В.В. Ковпак, Ю.А. Харкевич, В.Б. Данилов** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 93–96.

На основании анализа результатов собственных исследований, достижений мировой и отечественной ветеринарной и биологической наук в развитии клеточных технологий с использованием стволовых клеток животного происхождения предлагаются поэтапное внедрение в отечественную ветеринарную медицину новых методов клеточной регенеративной медицины, а также дополнение учебных базовых и клинических дисциплин сведениями об этом актуальном направлении.

Ключевые слова: ветеринарная медицина, трансплантация, стволовые клетки, развитие клеточных технологий.

Саливон В.А. Аутореинфузия асцитической жидкости при лечении собак с осложненным асцитом портальной гипертензией / **В.А. Саливон, В.П. Сухонос** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 97–100.

В последнее время отмечается значительное увеличение количества больных животных осложненной асцитом портальной гипертензией, даже при простоте и доступности современных терапевтических методик. К ним относится и аутореинфузия асцитической жидкости. Но, к сожалению, этот метод в современной ветеринарной практике еще недостаточно изучен и усовершенствован. Показано, что аутореинфузия асцитной жидкости улучшает результаты лечения животных с асцитом, положительно влияет на динамику клинических симптомов, показателей белкового баланса, а низкая травматичность, простота исполнения и доступность методики способствуют ее широкому внедрению в клиническую ветеринарную практику.

Ключевые слова: асцит, собаки, аутореинфузия, асцитическая жидкость, портальная гипертензия, белковый баланс, клиническая практика.

Мазуркевич А.И. Активность трансаминаз в сыворотке крови новорожденных телят разных биогеохимических зон / **А.И. Мазуркевич, В.В. Саулко, Л.В. Довга** // Вісник Дніпропетровсько-

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го державного аграрно-економічного університету. – 2017. – № 3(45). – С. 101–104.

Представлены новые данные об активности трансаминаз в сыворотке крови новорожденных телят, полученных от коров разных биогеохимических зон и провинций. Установлено, что активность трансаминаз в сыворотке крови таких телят несколько различается. Так, активность АсАТ у животных северо-восточной и западной биогеохимической зон выше в среднем на 6,8 %, чем у животных из отдельных провинций южной зоны, а активность АлАТ в сыворотке крови телят этой провинции (Донецкая обл.) выше на 6,7–15,1 %, чем у животных упомянутых зон. Дефицит или избыток микроэлементов в крови стельных коров вызывает снижение интенсивности белкового обмена в организме полученных от них телят, о чем свидетельствует снижение активности трансаминаз в сыворотке новорожденных телят. В частности, активность АсАТ в сыворотке крови телят, полученных от стельных коров, больных микроэлементозом, северо-восточной и отдельной биогеохимической провинции южной зон (Донецкая обл.), была ниже на 37,7–40,1 % ($p < 0,001$), чем у здоровых животных.

Ключевые слова: телята, АсАТ, АлАТ, микроэлементозы, биогеохимические провинции.

Взаимосвязь содержания кортизола в крови свиней с активностью системы антиоксидантной защиты при технологическом стрессе / **А.В. Данчук, В.И. Карповский, Р.В. Постой, Т.И. Приступа** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 105–108.

Приведены результаты исследований взаимосвязей интенсивности перекисного окисления липидов и активности системы антиоксидантной защиты с содержанием кортизола в сыворотке крови свиней при технологическом стрессе. Установлено, что в период относительного покоя содержание кортизола в крови обратно коррелирует с активностью супероксиддисмутазы и прямо с содержанием отдельных продуктов перекисного окисления липидов. Технологический стресс сопровождается возникновением и усилением обратных взаимосвязей содержания кортизола в сыворотке крови свиней с активностью ферментов системы антиоксидантной защиты и прямых корреляционных связей с содержанием продуктов перекисного окисления липидов в эритроцитах крови свиней.

Ключевые слова: кортизол, система антиоксидантной защиты, перекисное окисление липидов, свиньи, стресс, корреляция.

Признаки и свойства *Mycobacterium bovis* в аспекте штаммовых отличий / **А.А. Ткаченко, М.В. Билан, И.Н. Шендрик, Ю.В. Северина** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 109–114.

Приведены материалы многолетних исследований *M. Bovis*, которые свидетельствуют о сложности определения штаммовых особенностей. Показано, что она основывается на биологическом цикле развития. Акцентируется внимание на необходимости при определении штамма оценивать биологические свойства конкретной субкультуры микроорганизмов, особенно при динамичном цикле биологического развития. Утверждается, что морфологические формы определенных стадий развития обладают специфическими биологическими свойствами, которые влияют на штаммовые особенности.

Ключевые слова: штамм, туберкулез, микобактерии, L-формы, диссоциация, биологический цикл.

Повышение естественной резистентности и иммунологической реактивности щенков путем добавления к основному рациону кормовой добавки гуминовой природы / **М.М. Брошков, Л.И. Галузина, Л.М. Степченко, В.А. Трокоз, А.А. Семёнова** // Вісник Дніпропетровського державного аграрно-економічного університету. – 2017. – № 3(45). – С. 115–120.

Приведены результаты исследования динамических изменений гематологических показателей и установления сенсibilизации со стороны организма щенков при действии кормовой добавки гуминовой природы "Гумилид". Определено, что такой биологически активный препарат не вызывает сенсibilизации организма к компонентам действующих веществ, а напротив, обладает десенсibilизирующим эффектом, о чем свидетельствует уменьшение количества эозинофилов в крови подопытных животных. Основные количественные изменения популяции клеток крови, под действием биологически активного вещества гуминовой природы, установлены у гранулоцитов и моноцитов, которые являются представителями врожденной клеточного звена иммунитета организма. Отмечено, что кормовые добавки гуминовой природы метаболизируются и имеют полифункциональное действие на организм животных и птицы, так как обладают высокими адаптогенными свойствами, поддерживают иммунный статус и активно участвуют в регуляции метаболизма.

Ключевые слова: собаки, биологически активная кормовая добавка гуминовой природы, сенсibilизация, естественная резистентность, иммунологическая реактивность.

ABSTRACTS. REFERENCES. KEYWORDS

Assessing and forecasting resource and environmental safety in the context of sustainable development of regions Ukraine (p. 5–10)

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Raising of problem. The problem of ensuring resource and environmental safety and more efficient use of natural and economic potential of the area is a priority for each region of Ukraine. At the same time, formation of an efficient market economy in the regions requires solution of the problems between the goals of the social and economic system development and negative effects of its impact on the environment considering the influence of destabilizing factors.

Research results. Discussion. In this aspect, forming new comprehensive approaches to ensuring resource and environmental safety in the region and creating strategies for improving primary and secondary resources management based on optimization models and mechanisms are becoming a priority in regional development. According to the theory of ecosystems safety and taking into account the influence of social and economic factors thereon, a theoretical and methodological approach to assessing the level of the resource and environmental safety of the regions has been developed. This approach is to calculate a three-component index that takes into account a level of environmental safety of the region's economy, a level of environmental risk to the health of population and a level of resource preservation and resource restoration in the region. The results of fundamental and applied researches in an ecological safety, management by resource potential of region, position of conception of balanced development became theoretical and methodological basis of this scientific research. In the article scientific economic methods became the methodical base of research, including such as a monographic, comparative analysis, abstractly-logical method and other methods.

Conclusion. The practical implications of the work are strategy optimization for ensuring resource and environmental safety in the region, implementation of which will help to: improve the resource availability and competitiveness of the region, make additional profit from the secondary resources; preserve primary resources and to improve their quality, to return contaminated lands into the economy of the region (addressing the economical and resource aspects); minimize health risk for population from the negative impact of the waste, improve social and psychological climate in the region (addressing the social aspect); ensure preservation and restoration of the regional environment, natural state of ecosystems and entropy minimum (addressing the environmental aspect).

Keywords: resource and environmental safety, state forecasting, programmatic-target approach, sustainable development of regions.

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Physical and mechanical properties of grain of different wheat varieties and strains (p. 11–18)

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The article presents results of studying linear dimensions of caryopsides, crease characteristics, width of the crease loop, geometric characteristics and physical properties of grain of different varieties and strains of soft wheat, club wheat and Ethiopian wheat. A large range of linear dimensions of caryopsides is peculiar to wheat grain: length is from 5,1 to 7,6 mm but the width and thickness varies from 2,3 to 2,9 mm depending on the variety and strain. Elongated and oval shape of caryopsides is the most common. It is found that grain of Podolianka, Kokhana, Emerino, Kulundynka and Chornobrova soft wheat varieties and strains of Ethiopian wheat (Ethiopian 1) and club wheat (Umanchanka) have the least depth and width of the crease loop. The ratio of the crease depth to the thickness of a caryopside of other soft wheat varieties was changing from 0,50 to 0,59 or by 11–31 % more than the check variant. Grain of introgressive wheat strains also had a high ratio

ABSTRACTS. REFERENCES. KEYWORDS

of the crease depth to the thickness of a caryopside that was changing from 0,50 to 0,67 or by 11–49 %.

The caryopside volume ranges from 14,0 to 28,1 mm³ depending on the variety and strain. However, only caryopsides of Vdala and Suason varieties had the caryopside volume that was at the level of the check variant which varied from 27,4 to 2,9 mm³ and LPP 1314 and NAK61/12 strains varying from 27,3 to 28,1 mm³. Caryopsides of Umanchanka strain and Kulundynka white-kernelled wheat variety have the smallest volume – 14,0 mm³ and 17,8 mm³, respectively. It should be noted that their caryopsides have the least external surface area which is 38,7 and 48,8 mm², respectively, to 73,2 mm² in caryopsides of LPP 2793 strain.

Caryopsides of Umanchanka strain have the greatest sphericity (0,72) and caryopsides of LPP 2793 strain have the lowest sphericity (0,57). Caryopsides of other wheat varieties and strains have sphericity varying from 0.62 to 0.68. Specific surface of caryopsides varies from 2,39 to 2,99 mm²/mm³ and the ratio of V/F is changing from 0,30 to 0,42 depending on the wheat variety and strain.

The density of grain with pores ranges from 0,71 to 0,83 g/cm³ and the density of grain without pores varies from 1,10 to 1,25 g/cm³ depending on the wheat variety and strain. Grain of Vdala variety and LPP 2793 strain are better provided with air – 8,32 and 7,28 m³/t, respectively. However, its laying density is the smallest – 58,2 and 56,9 %, respectively, and the porosity – 41,8 and 43,1 %. Air providing for other wheat varieties and strains is 4,93–6,50 m³/t. The laying density is high varying from 59,2 to 72,8 % and porosity from 32,8 to 40,8 %.

Keywords: soft wheat, club wheat, Ethiopian wheat, linear dimensions, physical and mechanical properties, crease.

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Metals in the system "technozen – Black locust" in the restoration stands within steppe zone in Ukraine (p. 19–22)

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Raising of problem. Find toxicants resistant wood species and their deposits properties is important tasks of environment research. Wood and bark tissues can to retrieve inorganic contaminants from environment and to accumulate on longer time. Over the past decade, studies the experimental confirmation prospects of phytoremediation method for optimize the transformed landscapes.

The aim of the research establishment of laws deposits properties of inorganic contaminants in different fractions of the aboveground biomass plants black locust and its reclamation potential in the mine sites.

Materials and research methods. The plots was put down in the site of the forest restoration mine enterprise "Pavlogradskaya" in Pavlograd city Dnipropetrovsk region. The object of the study served the a fractions in the black locust aboveground biomass (wood trunk, wood bark, leaves, fruit) aged 41 years, which growing at tehnozem substratum in the reclamation plantings.

Determined the concentration of the metals (*Sb, Pb, Cd, As, Ni, Cr*) in the black locust wood trunk, bark trunk, leaves and fruit from restoration stands which growing on the tehnozem substratum determine the method of the plasma-optical emission spectrometry (ICP– OES).

Research results. Discussion. Indicators metal content in the test tissues in the varying degrees exceeded limit values chemicals in soil: *Pb* – 1,3;

ABSTRACTS. REFERENCES. KEYWORDS

Cd – 5,3; *Ni* – 10,8; *As* – 12,9; *Cr* – 15,7, except Stybium concentration which was a range of normal values. Note that set the concentrations do not exceed the limits of what is phytotoxic.

Inorganic contaminants on the acid substrates, which is the study *tehnorem* (pH 4,6–4,8) have different degrees of the mobility, Plant tissues of the aboveground phytomass capable of varying intensity metals accumulate, so the next stage of the research definition of the metal concentrations in the compartments black locust aboveground biomass.

In absolute values of the content of these substances belong to the group of inorganic contaminants low concentrations. The range of values in the fractions of black locust aboveground biomass is 0,8–9,5 mg/kg absolutely dry matter.

Equal concentration in all investigated aboveground biomass compartments – 4,4–4,6 mg/kg showed Lead. Chrome had the same concentration – 1,7 mg/kg in all fractions, except the leaves, where it was more intense concentration – 2,8 mg/kg. The distribution Stybium found equal representation in the trunk wood and trunk bark tissues (0,8 mg/kg) and its dual exceeding the said concentrations in the leaves and fruits.

In a fraction of aboveground biomass of leaves fixed maximum concentration for almost all metals studied, from which the largest concentration of Nickel – 5,5 mg/kg of absolutely dry matter. Trunk wood and trunk bark has a smaller concentration than in the leaves and have individual characteristics according to each metal. In fractions of wood trunk more concentration relative to the trunk fixed for Nickel, Cadmium, Arsenium 4,8; 4,7 and 3,5 respectively. Same content per unit mass of absolutely dry matter discovered for Lead, Chromium and Stybium.

Conclusion. Black locust fruits maximum concentration became Nickel – 8,5 mg/kg, it is the maximum concentration detected for the studied inorganic contaminants in all fractions of the aboveground biomass of *Robinia* model trees in restoration stands. The lowest content of the black locust fruits Chromium and Arsenium showed. According with literature data translocation coefficient of the metals from soil to plant are: *Pb* and *Cr* – 0,01–0,1; *Ni* and *Cu* – 0,1–1,0; *Zn* and *Cd* – 1,0–10,0. The calculated values of the translocation coefficients, which demonstration biological accumulation by *Robinia* aboveground biomass compartments are consistent with literature data. According to the obtained bioaccumulation coefficients all studied metals in the system “black locust–*tehnorem*” belong to the elements of weakly accumulation. Most value of translocation coefficients was recorded for Cadmium in the fraction leaves. Such substances as Arsenium and Nickel deposited in black locust aboveground phytomass least.

Keywords: aboveground biomass, black locust, inorganic contaminants, forest restoration.

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Effect of mulch tillage on nutrient status of chernozem in crops of barley spring (p. 23–31)

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Raising of problem. Improvement of the methods of basic soil cultivation makes it possible to regulate practically all soil processes, create favorable conditions for the development of spring barley plants, and provide high efficiency of application of mineral fertilizers, along with stubble residues of the predecessor, which ensure the reproduction of fertility and restore the natural soil formation of chernozems in agroecosystems.

Materials and research methods. The basic cultivation of soil and fertilizer on the action of the spring barley branched plants are interconnected, since obtaining a high grain yield is possible only under the condition of full nutrition of the plants. Therefore, it is necessary to consider the content of basic nutrients in the soil, which are nitrogen, phosphorus and potassium, which will allow regulating the content of their available forms for obtaining the expected results without significant environmental pressures.

Discussion. In recent years, in the technology of growing spring barley, the widespread distribution of fine mulch cultivating soil, which excludes the possibility of rolling the arable layer, and involves the use stubble residues of previous crops.

Regarding the use of plowing, there is a steady tendency to increase the nitrification capac-

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ity of chernozem common compared to minimizing tillage (chiseling, disking) soil treatments and increase in the content of nitrate nitrogen at 3–4 mg/kg. The use of moderate doses of mineral fertilizers ($N_{30-60}P_{30}K_{30}$) in the technology of growing barley significantly increased the content of nitrate nitrogen in the layer (0–30 cm) by 15,6–34,6 % compared to the unfertilized background. The phosphate and potash regime of chernozem during chiseling and plowing was practically the same except for the disking where the decrease in the content of phosphorus and potassium in the layer (0–30 cm) was observed due to the deterioration of the microbiological activity of the soil, the aeration and mineralization of the vegetative substrate, and as a consequence of the reduction of release nutrients from plant residues in ground solution. There was also established a tendency to improve on the fertilized background the provision of crops with mobile phosphorus and potassium compounds during the whole of the barley vegetation and also the increased use of these elements when adding nitrogen-rich tufts ($N_{60}P_{30}K_{30}$).

Conclusion. The use of field plowing and chiseling ensures a nearly equivalent grain yield of barley 2,69–3,35 and 2,35–3,32 t/ha, respectively. The soil disking reduces the yield of grain crops by 0,14–0,48 t/ha (5,9–17,8 %) due to the immobilization of nitrogen by microorganisms in the decomposition of plant residues.

Keywords: spring barley, tillage, mineral fertilizers, nutrient regime, crop residues, grain yield, economic efficiency.

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Entomopathogenic bacteria *Bacillus thuringiensis* and their potential in biocontrol of insects (p. 32–35)

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The influence of breeding grounds to productivity of strains *B. thuringiensis* № 87/3 of the first seroprevalence was investigated. Determining the autonomic stage of growth patterns of aksenic culture strain *B. thuringiensis* 87 and 800 at the fermentation.

The data on multifunctional properties of natural bacterial strains *B. thuringiensis* var. *thuringiensis* with entomotoxic and antifidant effects on larvae of *Leptinotarsa decemlineata* Say. are presented. It is shown that aksenic culture strain *B. thuringiensis* № 87/3 after in vitro selection has high potential of efficiency (titer metabolic spore-crystal complex is from 3,0 to 4.7 billion/ml culture fluid) and insecticidal action (96,0–99,0 %).

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The efficiency of the use of natural bacterial strains *B. thuringiensis* in the system of microbiological control of insect is proved.

Search, selection and integrated research of prospective strains-producers as the basic constituent of biopreparations are today the most urgent areas of research.

Keywords: *B. thuringiensis* var. *thuringiensis*, spore-crystal complex, entomotoxic action, antifidant effect.

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Features of formation of the soybean crop with a Cr^{+3} content depending on the use of organic fertilizers, manufactured on the latest technologies (p. 36–39)

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The results of research on the effects of organic fertilizer "Bioproferm", "Bioactive" produced by accelerated biological fermentation and liquid organic fertilizer "Biochrome" by cavitations with a balanced content of trivalent chromium content on

yield and Cr^{+3} in soybean grain varieties "Ustya" in this article shown.

The task of science is to develop and introduce in production technological measures for the cultivation of crops with the necessary content in the production of macro- and trace elements, in particular, of tri-chromium, which will contribute not only to the increase of crop yields, but also to the improvement of product quality. This condition is essential for the formation of a balanced diet in animal feeding and balanced nutrition.

In Ukraine, unfortunately, there are still no rules for replenishing the human body with trivalent chromium. But it is important that the companies that produce mineral-vitamin additives with the content of Cr^{+3} ("Multi-tabs. Classic" Denmark – 50 micrograms, "Vitam" Ukraine – 30 micrograms) successfully operate today in the pharmaceutical market of Ukraine.

Therefore, in order to provide a scientifically-based balance, it is important to use organic fertilizers, including tri-chromium, which is a necessary element in feed for animals, poultry and food products for people, in soy-growing adaptive-landscape technologies.

The purpose of the research is to develop an adaptive technology for the cultivation of soybean var. "Ustya", based on the use of organic fertilizers produced by the method of biological fermentation and liquid organic fertilizer "Biochrome", produced by the cavitations method, for the cultivation of soybean grain with a balanced content of trivalent chromium.

The researches during 2013–2016 found that organic fertilizers "Bioproferm" and liquid organic fertilizers "Biochrome" had a positive influence on the agrochemical and agrophysical parameters of the soil, its biological activity, on the growth and development of plants. In particular, a positive dynamics of changes in pH soil has been established. As a result of application in the field of soybean organic fertilizer "Bioproferm" with a trace element chrome. The introduction of it in a dose of 10 t/ha provided a decrease in the acidity of the soil by 0,5 pH salts.

Positive changes in the amount of nitrogen in the soil are established, in particular, a tendency to increase the content of both total nitrogen and its nitrate form. The increase in the content of total nitrogen was due to the introduction of all types of fertilizers. Thus, in the version where 10 t/ha "Bioproferm" were introduced with the trace element Cr^{+3} , the total nitrogen content was greater than the control at 36,5 mg/kg, respectively nitrate nitrogen – 16,81 mg/kg. There was also an increase in the amount of mobile phosphorus by 28,97 mg/kg and exchangeable potassium at 8,38 mg/kg compared to control. Against this background, the fertilizer has a clear pattern of increasing the content of chromium micronutrients by 32,25 mg/kg compared to the control and by 30,54 mg/ha compared to the version where bio fertilizer "Bioactive" 10 t/ha was introduced.

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Organic fertilizers, manufactured according to the latest technology, have had an effect on increasing the yield of soybeans. So, in the version where the organic fertilizers were introduced into the "Bioproferm" fertilizer at a dose of 10 t/ha and underneath the growth regulator "Biochrome" (5 l/ha), it was 3,06 t/ha, which is 1,25 t/ha more than on the control and by 0,18 t/ha more than in the version where "Bioactive" was injected at a dose of 10 t/ha and sprayed with a growth regulator "Biochrome" – 5 l/ha.

In this variant, the highest yield of soybeans for corn was 3,67 t/ha was most favorable in 2016, and the lowest – 2,84 t/ha least favorable for climatic conditions in 2013 and 2,84 t/ha – 2015.

The introduction of organic fertilizer "Bioproferm" with a balanced content of trivalent chromium contributed to the accumulation of trivalent chromium in soybeans. So, in the version that brought autumn fertilizer "Bioproferm" 10 t/ha in autumn and during the growing season, plants were sprayed with liquid organic fertilizer "Biochrome" at a dose of 5 l/ha, in the grain of culture was the highest content of trivalent chromium – 1,125 mg/kg, or by 0,609 mg/kg more compared to control.

On the basis of our research, it was established that the use of organic fertilizer "Bioproferm" and liquid organic fertilizer "Biochrome" positively affects the growth and development of soy plants of the var. "Ustya" during the entire period of their vegetation, provides an increase in yields by 62,4–69,1 % and obtaining environmentally friendly products with the content of the required amount of trivalent chromium.

Keywords: soybeans, organic fertilizers Bioproferm, Biochrom, growth regulators, trivalent chromium, yield.

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Effect of growth regulators on plant growth and development of sunflower on yield formation (p. 40–43)

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The purpose of the study was to study the influence of growth regulators Vermimag, Vermiodis on presowing seed treatment and single- and double spraying of plants during the growing season on growth, development and yield of sunflower hybrid HP Brio in the conditions of the forest-steppe of the West.

The research was carried out during 2013–2016 on the research field of the branch of the plant and breeding department of the Podilsky state agricultural and technical university in the PF "Bogdan and K" of the Snyatyn district of the Ivano-Frankivsk region, which is located in the western part of the forest-steppe.

Soil on the experimental part of the turf, podzolized medium-loamy, arable layer are characterized by the following agrochemical indicators: the content of alkaline hydrolyzed nitrogen – 72 mg/kg; mobile phosphorus – 124 mg/kg; exchangeable potassium – 113 mg/kg; pH of a salt is 4,54; humus content – 3,39 %. Weather conditions in the years of research differed, which made it possible to assess the influence of growth regulators on the growth and development of sunflower plants.

Methods of research commonly accepted: field, laboratory, mathematical-statistical, comparative-computational.

It has shown that four-year studies Vermimag, Vermiodis plant growth regulators for seed pre-planting and single- and double spraying of plants during vegetation at all stages of orthogenesis contributed to improved growth, plant development, and yield formation of sunflower seeds.

The duration of the vegetative and interphase periods in all years of the study depended on weather conditions, changed under the influence of growth regulators. The oscillation of these parameters is established 2–4 days.

Plant growth regulators Vermimag and Vermiodis influenced the size of the leaf surface and the photosynthetic activity of sunflower agroecosystem, the duration of vegetation and the productivity of the culture.

The highest growth rates of the leaf surface were noted in the variant of pre-planting treatment by the regulator of growth and development of plants Vermiodis in a dose of 5 l/t.

The results of the studies showed that the growth regulators Vermimag and Vermiodis in-

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fluenced the growth of plants. In fact, pre-sowing seed treatment by the growth regulator Vermiodis at a dose of 4–5 l/t influenced on the plant height which was on 10–15 cm larger than the control.

Growth regulators Vermimag and Vermiodis for pre-seeding seed yielded a significant increase in the seed yield of the hybrid HP Brio sunflower in all experimental variants compared to control.

The highest yield of sunflower hybrid HP Brio (3,40 t/ha) was obtained in the variant of pre-sowing treating by the growth regulator Vermimag in a dose of 7 l/t and by using the regulator growth Vermiodis in a dose of 5 l/ton – 3,42 t/ha respectively.

In the variant of pre-sowing treating by the growth regulators Vermimag and Vermiodis ensured an increase in the yield of the crop by an average of 9,2–11,8 % compared to the control.

The high rates of sunflower seed yield of the hybrid NK Brio were obtained at the pre-sowing seed treatment and two-time spraying of plants during vegetation by the growth regulators Vermimag and Vermiodis.

In the variant where the seeds were treated with Vermiodis – 4 l/t and and two-time spraying of plants during vegetation by the growth regulator Vermiodis in a dose of 4 l/ha: the first time in the phase of 3–5 leaves, the second time in the phase of 7–12 leaves in the average yield over the years of experiments was 3,7 t/ha, which is on 0,52 t/ha more compared to the control and 38 % more compared to the one-time spraying variant. The highest yield was obtained in 2016 – 4,02 t/ha, or 0,65 t/ha more in comparison with the control, and the smallest – an average of 3,53–3,40 t/ha in less favorable climatic conditions of 2014–2015 years.

The using of growth stimulants fits into the system of agrotechnical methods of crops growth and does not require additional costs, therefore their application contributes not only to the increase of gross production of grain, but also reducing its cost, what is especially important in conditions of market competition.

Keywords: sunflower, plant growth regulators, Vermimag, Vermiodis, growth and development, yield, efficiency.

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Soddy-alluvial soils of the river Dniepro floodplain within the natural reserve "Dnieper-Orelsky": morphology and profile distribution of the physical properties (p. 44–55)

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The morphological features of alluvial soils in the Dnieper floodplain within natural reserve "Dnieper-Orelsky" and the regularities of the soil physical properties profile distribution (electrical conductivity, humidity, density and soil penetration resistance) have been studied. Two sections have been laid in the Dnieper floodplain riverbed oak forest in the June 8, 2017. Soil section № 1 is 3 m from the channel ducts r. Dnieper on the highest part of levees. Soil section № 2 laid in 45 m along the river bed from № 1 and 20 meters from the bed on the slope of the levees. Based on an analysis of morphological features described soil diagnosed as alluvial sod forest normal and short-profile soil. Profile variation of the electrical conductivity, humidity, density and soil penetration resistance of the soil indicates that in these edaphotops environmental regimes characterized by the above indicators do not go beyond the critical limits that can restrict the existence of the majority of the soil inhabitants. The dependence of soil penetration resistance on depth can best be described as sigmoid model. The lowest soil penetration resistance is characteristic for the surface, and the highest is characteristic for the deeper layers. Increasing the soil penetration resistance of the surface takes place slowly at first, with a depth of 20–25 cm is accelerated speed, and depth of 75–80 cm is ramped down again. Profile distribution of the soil penetration resistance can be described as a combination of regressive-eluvial (upper part of the soil) and progressive eluvial (the lower portion of the soil) type. Investigated physical properties are characterized by a coherent dynamic profile distribution. These

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results indicate that such physical factors as humidity and density in the background taking into account the depth of the horizon can statistically explain 87 % of the variation of the soil penetration resistance within the profile of the soils. Each of the aspects of the dynamics of soil profile properties, formally designated as principal component characterized by a specific profile distribution. This indicates that the observed profile distribution of soil characteristics is a superposition of a number of specific patterns, which are caused by features of the soil genesis.

Keywords: morphology of soils, alluvial soils, floodplain, physical properties, soil penetration resistance, soil electrical conductivity.

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The evaluation of dairy productivity of the Holstein breed heifers for the kappa-casein gene (p. 56–59)

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Problem statement. The research work was carried out on the stock of cattle of the Holstein breed in the farm of PrAS “Agro-Soyuz” in the Dnipropetrovsk region. The 60 heads of heifers were selected: 30 heads – heifers-transplants, 30 heads – analogues of transplants, for the study of dairy productivity. The kappa-casein gene polymorphism was studied in 10 heads: 6 heads – embryo transplants, 4 heads – analogues of transplants. Analyzing the results of research of the dairy productivity indicators by heifers embryo-transplants and their analogues, it should be noted that for all

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signs of dairy productivity there is an exaggeration in the group of heifers-transplants over their analogues. The difference in all parameters, except for the protein content in milk, is highly reliable ($P < 0,001$), which indicates the significant differences in genetic potential between the experimental (heifers-transplants) and control (analogues) groups, at the expense of high-yield mothers-donors.

Discussion the results of studies. It should also be noted that for analogues is characterize more diverse by dairy productivity than in transplants, which again confirms the influence of genetic potential of donors on the productivity of daughters-transplants.

Estimating the 10 heifers at 6 months age for the gene of kappa-casein, two genotypes were identified: CSN3^{AA} and CSN3^{AB}. The obtained results showed that in genotypes of two of the six heifers-transplants and in two of four analogues, the B-allele is present in the heterozygous status.

According to the dairy productivity indicators, the group of heifers-transplants and their analogues, which have been tested for the kappa-casein gene, are different.

The results of the analysis of the materials indicate that, by the yield the carriers of the AA-genotype, both in the experimental (transplants) and in the control groups (analogues), is exaggerated the AB-genotype by an average on 335–370 kg of milk. In the carriers of the AB-genotype, the fat content in milk is reduced by 0,07 % in the experimental group and by 0,11 % in the control group, as opposed to the protein content indicator, where growth in the groups is observed at 0,15 and 0,03 % in accordance. The amount of milk fat and protein in the milk of heterozygous animals in comparison with homozygous genotypes is decreases on 0–30 kg in transplants and on 9–22 kg in analogues.

Conclusions. The reason for this is that according to the group of authors Ron M., Yoffe O., Ezra E., Medrano J., Weller J. (1994) in the milk of cows with BB-genotype kappa-casein is higher (on 0,15–0,20 %) protein content compared to a combination of AA alleles. According to scientists Cowan C., Dentine M., Colye T. (1992), this is explained by the fact that B-allele is associated with a decrease in the percentage of milk fat contents.

In general, it should be noted that the presence of B allele in heterozygous genotypes of heifers compared with AA-genotypes makes it possible to predict the increase of protein content and the improvement of the cheese suitability of milk, which will allow for the production of high quality cheeses.

Keywords: heifers-transplants, kappa-casein, dairy productivity, cheese-worthiness of milk.

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Aspects of the development of goat breeding as the modern direction of ecological production in livestock industry (p. 60–63)

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Problem setting. Lack of essential high-grade and necessary for proper functioning nutrients in the diet is nowadays a highly urgent matter for the developed countries. The demand for high-quality and safe food products has been increasing in the world. The goat breeding sector, which is not new for Ukraine, has recently become an import issue and requires special attention.

Paper objective. Study main aspects of the history of development, monitoring of the efficiency of farms, which produce goat milk, as well as solving the practical problems of the revival of the goat breeding sector.

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Results of the research. The market of the goat milk and its products is still not fully repleted, the industry is not completely revived, and historical experience of the goat breeding development is aimed to help to overcome the obstacles in nowadays conditions. In Ukraine there are about 650 thousands goats, mainly dairy and mixed-productivity. 95 % of them are concentrated in private ancillary farms, which keep from 1 to 50 heads. About 10 large goat farms today operate on the territory of Ukraine. There are a number of problems in goat breeding, feeding and rearing technology in our country. The breeding stock of dairy goats is mainly represented by the Zanan breed and its cross breeds with local goats. Today the farms and small private enterprises are the most promising in the field of organic production. The goat farms do not need complicated technologies.

In order to study the efficiency and prospects of work of the enterprise, which specializes in the production of eco-friendly products of goat breeding, core technological parameters of the usage of goats in private enterprises were studied.

The enterprise "Babyni kozy" is located in the Galaiky village in the Tetiivsky district of Kyiv region. There are 150 heads of dairy goats of Zanan breed in the farm. The duration of lactation is 10–11 months. The fat content of milk is 3,8–4,5 %. The farm uses a pasture-cubicle system.

In order to receive high-quality premium goat milk, a milking machine of the closed type from handmade parts and parts of the factory's production of the company "De Laval" are used for milking. During a year 15000 UAH profit can be received from one goat. The efficiency of production is 135–150 %. There are 30 does of the Zanon breed in the small family farm "Sikorska" in Zinkivsky district of the Poltava region. Goats provide 5–6 liters of milk per day with fat content 3,6–4,2 % and lactation lasting 6–7 months. The farm uses stall and pasture system for keeping goats. Getting pus out, feeding and milking is carried out manually. Goats are watched by family of four people. The profitability of production on such a small farm makes an average of 110–120 %.

Conclusions. Nowadays there is a growing demand for high-quality organic food. The profitability of the field of goats breeding exceeds 100% primarily because of the relatively simple technological system of growing and keeping goats as well as high prices for products. It is necessary to pay attention to such an important factor as creating and developing the culture of consumption of high-quality goat milk and its products.

Keywords: goats, goat breeding, goat's farm, goat's milk, saanen goats.

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Determination of thermal parameters of the soil during the day (p. 64–67)

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The results of studies of accumulation of moisture in the soil. In order to grow and gather a good harvest in the existing natural conditions is necessary to understand the moisture accumulation technology and thermal characteristics of the soil profile. Soil processing system theory creating insulating layer on the surface of the soil and the change in the physical characteristics of the soil stratum, the soil cover insulating layer allows depending on its physical and mechanical properties affect the whole complex of factors that determine the physical conditions in the soil. Therefore, in order to grow and gather a good harvest in the existing natural conditions is necessary to understand the moisture accumulation technology and thermal characteristics in the soil profile.

In the study of the thermal regime of the soil there is a need for the ability to predict and control the elements of the soil profile: temperature distribution inside the array of soil, their rate of change, factors influencing their dynamics, heat flow, thermal storage and the formation of moisture in the soil. The process of formation of moisture can be controlled by monitoring the temperature at the surface and depth of the soil, followed by the adoption of decisions on the method of cultivation. For this purpose the device was designed to measure the temperature on the surface of the soil in depth. When the heat and mass transfer from the surface to the depth of the soil (at the

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measurement temperature difference) is controlled by a condensed layer formed by the moisture, which is a measure of moisture and retains moisture removal with greater depth. As a result, using the temperature difference Δt (temperature measurement can be performed with a thermometer, pyrometer, or with a pyrometer mounted on drone dominant whole field time) on the surface of the soil in the morning and in the evening, we get an existing profile for the accumulation or loss of moisture in the soil during the day.

Keywords: moisture, soil temperature, condensation, while measuring temperature, the temperature difference Δ .

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Substantiation of the constructive scheme of supplying natural gas for automotive gas diesel engines (p. 68–72)

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Formulation of the problem. The analysis devices for supplying gas to internal combustion engines of leading firms, identified the advantages, disadvantages and application prospects of the considered devices.

It is noted that modern ejector system, in which gas and air are mixed in the intake manifold of the engine, and control gas supply is performed using the lever-diaphragm mechanisms, optionally supplied with electronic regulation, which can significantly increase stability. Fuel injection system with centralized or distributed injection of gas to enhance the possibility of regulation of parameters of working process and improve the characteristics of the engine. Gas-diesel (dual-fuel) system applied for heavy duty vehicles and buses. The main advantages of the diesel – reduction in maintenance costs of diesel fuel by its replacement (80 %) with cheap natural gas, reduced the opacity of exhaust gases by several times, the preservation of the characteristics of the base diesel engine. In the power supply system of diesel with gas injection, used electronic gas reducer, stable and reliable quality-rific pressure in the gas rail, because the lever-diaphragm gearboxes not designed to work with pulse analysis of gas.

Purpose of work. Substantiation of the constructive scheme of supplying natural gas for automotive gas diesel engines.

Results of the study. Conclusions. Considered a structural diagram of a system variable speed regulation of diesel engine, developed in the DNAU, the proposed method of improvement of this system to improve the control accuracy in the proofreading phase of the external speed characteristics. The necessity to use gas burners with electronic control and distributed injection of gas. We show the possibility of adjustment of the cyclic gas flow and proofreading the site characteristics, and idle speed.

Keywords: diesel engine, the gas supply system, the control system of the diesel engine, a gas injector, variable speed regulation.

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Experimental studies of the spherical disk on an spring stand (p. 73–76)

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Formulation of the problem. Among the tillage machines which are based on the disk tools, the disc harrow belongs to the most perspective models. However, there are two problems which need to be solved. Firstly, it is possible that the system enters the resonance zone. Secondly, under certain conditions, the direction of oscillation can be directed irrationally, that is, the disc harrow perceives the reaction of the soil by the lateral surface which leads to an increase in the traction resistance.

The purpose of our work was to justify the rational parameters of the tine in terms of creating a rational mode of disk oscillation.

Results of the study. The results of field research of a concave disk on a spring tine are presented in relation to checking a number of working hypo-

theses about mechanisms of oscillation excitation and rational direction of the total vector of their action. The working hypothesis is that the oscillations in the system of an string stand-disk arise from the periodic change in traction resistance. In general, traction resistance has two components. There are a constant and a variable ones. The nominal permanent component is formed under the condition of the initial parameters of stability of the soil (mechanical and technological properties). The change arises in the case of random or cyclic change of these parameters and is conditionally divided into two types: the variation component: the one that is cyclic in nature and obeys a certain distribution law, and a random impulse component. The rational direction of the rolling force action is justified – its vector must lie in the plane of rotation of the disk blade.

Conclusions. The most rational construction of the spring tine has two bends of the plane of the working surface which allow the riser to perceive the components of the traction resistance with the deflection of its individual parts. This makes it possible by changing the length of the plots to influence the direction of action of the forces that excite oscillations in the system. The energy-efficient direction of oscillation which vector is in the plane of rotation of the disk. As a result, the tine can work effectively in a certain range of hardness of the soil (specific gravity).

Keywords: disc harrow, spring tine, vibration damping action, concave disk, rotational area, components of resistance, resonance.

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Parameters of subclinical mastitis in goats (p. 77–81)

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The universal definition of a cell number threshold to distinguish between healthy and infected udder halves does not exist yet.

The objective of this study was to determine the possible parameters for detecting subclinical mastitis in goats. The materials of the research were 27 samples milk of goats.

The main indexes of milk were determined by means of ultrasonic analyzer of milk of "Ekomilk type MILKANA KAM 98-2a", the somatic cells count was determined by means of viscometric analyzer "SOMATOS-M", milk films stained with pironin Y and May-Grunwald methods. Determination of chloride ion content in milk was performed by a titrimetric method. A sample of settling was also conducted, chlorine-sugar number was counted.

After determination of physical and chemical parameters, the samples were divided into 3 groups according to the chloride content in the milk: group I – <250 mg%; group II – 250–300 mg%; group III – >300 mg%. The chloride content was significantly different between groups of milk samples (P <0,001).

In goat milk with a chloride concentration >300 mg% fat content increased by 0,4 %, protein by 0,24 %, dry non-fat milk solids by 0,66 %, lactose by 0,28 %, pH by 2,8 %, the freezing point decreased by 7,2 % compared to samples of milk with a chloride content <250 mg%, but statistical difference was not found.

With a chloride content in goat milk >300 mg%, the somatic cells count increased by 3,2–5,7 times in relation to the group with chloride concentration <250 mg%, depending on the method of study (P <0,05 and P <0,001 accordingly). The parameters of somatic cells of the second group are also 2,1–3,8 times higher in comparison with the first group (P <0,05 and P <0,01 respectively).

The chlorine-sugar figure in the milk of healthy goats (with a chloride content <250 mg%) is average 5 (from 4,1 to 5,9). In milk with a chloride content >300 mg%, the chlorine-sugar figure is 7,2 (from 6,5 to 7,9).

The chlorine-sugar figure in the milk of goat in the first group is less than in the second and third groups by 20,9 % and 44 % respectively (P <0,001). The index in the milk of goats in the third group is more than in the second group by 19 % (P <0,01).

The electrical conductivity of goat milk in the first group is less than in the second by 13,1 % and than in the third – by 31,3 %, (P <0,05). With a chloride content >300 mg%, a positive settling test with goat milk was observed.

With an increase in the chloride content in goat's milk, bacterial contamination of the first milk streams also increased, but statistical difference wasn't been detected. Streptococcus agalactiae was isolated in 2 of 6 milk samples of the third group.

So, the aggregate of such indicators as the chloride ion content >300 mg%, the somatic cells count >2 million/ml, chlorine-sugar figure 7 and above, a positive settling test, can serve as a criterion for detecting subclinical mastitis in goats.

Keywords: goat milk, subclinical mastitis, somatic cell count, chloride contents, chlorine-sugar figure, electrical conductivity, settling test, total plate count.

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Mastitis is an actual problem of a dairy herd (p. 82–84)

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Formulation of the problem. During the last forty years, both in our country and abroad, active scientific and practical developments on the problem of reducing the morbidity of dairy cows by mastitis are conducted.

Mastitis are widespread in animal husbandry, causing farms to suffer significant economic losses, which consist of lower productivity, worsening nutritional and technological properties of milk, premature dropping of animals, costs for diagnostics and treatment. Milk from diseased animals and products produced from it are a source of infection of humans and animals.

The disease is diagnosed in many countries of the world, including on farms with a high technology culture, as well as in farms of Ukraine, regardless of the form of ownership and the directions of its activities. According to many authors, morbidity of cows for mastitis covers from 21 to 70 % of the herd, and 8–16 % of cows are ill 2 times and more during lactation. The greatest degree of defeat of cows by mastitis is observed in autumn-winter and spring seasons.

The purpose of our work was to conduct a research of qualitative indicators of milk from healthy cows and cows sick with mastitis. Carry out a bacteriological study with the subsequent definition of the culture and morphological properties of the micro flora of milk selected from cows suffering from mastitis.

Materials and research methods. The work was carried out at the farm JV "Raiz-Maksymko", Lubny district of the Poltava region, on cows of black-and-white breed, in the winter and spring. Two groups of experimental animals were created. The first group consisted of clinically healthy animals during lactation, without raising the level of somatic cells in milk samples. The second group consisted of clinically ill animals with a diagnosis of "acute and chronic mastitis" with a defeat of one in four quarters of the mammary gland.

Sampling and delivery to the laboratory was conducted according to DSTU ISO 707: 2002 Milk and dairy products. Sampling guide. Determination of qualitative indicators of milk was carried out in the Lubny District State Laboratory of Veterinary Medicine, with the help of the device EKOMILK.

Results of the study. Bacteriological examination of milk was carried out by sowing on MPA

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and 5 % blood agar, and a day after cultivation on blood agar.

Culturally-morphological properties of microorganisms were determined by generally accepted methods.

Qualitative indicators of milk from healthy cows and of cows sick with mastitis are given in the table. According to the data presented in the table in the milk of cows with mastitis fat content is 25 % lower than in milk of healthy animals. The dry residue level is 24 %, the density is 10 %, and the protein content is reduced by 12 %.

Microorganisms, in particular staphylococci and streptococci, are known to persist in the mammary glands, nipple channels and on the skin of the udder and are considered contagious. Infection occurs during milking, when milk contaminated by staphylococci or streptococci from affected cows falls on the nipples of healthy cows. Pathogenic microorganisms produce toxins that destroy cellular membranes and can directly damage the glandular parenchyma of the udder. There is active migration of white blood cells to the inflammation zone. At the initial stage, microorganisms damage the epithelium of the nipple channels, surrounding tissues, and tanks inside the affected lobe of the mammary gland. Subsequently, microorganisms migrate through the milk ducts and form deep loci of infections in the glandular parenchyma.

Conclusions. Therefore, one way of solving this problem is to reveal the etiopathogenesis of the disease to create effective drugs for the treatment of cows' mastitis. To this aim, we studied the microbiological study of milk and the secretion of the udder with the subsequent definition of the culture and morphological properties of the isolated micro flora. The study of the cultural and biochemical properties of isolated microorganisms made it possible to classify them as pathogenic gram-positive streptococci.

To the most widespread disease of the cows' mammary gland include mastitis. According to the results obtained, it can be concluded that the cause of mastitis is highly pathogenic forms of streptococci and staphylococci. The main conditions for the development of mastitis are violations of milking technology and other factors contributing to the emergence of mastitis.

Keywords: cows, milk, mastitis, diagnostics, pathogenic gram-positive streptococci.

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The effectiveness of the immunomodulator Avesstim™ and vitamin Evitsel in conditions of farming turkeys (p. 85–88)

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This article presents data of the influence of the drug Avesstim and Evitsel on the morphological, biochemical and immunological parameters of the blood of experimental turkeys. The drug Avesstim in conjunction with the drug Evitsel positively affects the physiological status of the turkey organism. there was an increase in the number of erythrocytes in the blood of experimental groups of birds: in the blood of the bird from group I – by 2,8 %; group II – 5,6 %; group III – 9,7 % at the 210-day age in comparison with the analogues from the control group. A similar picture was observed for the level of hemoglobin. The synergistic interaction of the immunomodulator Avesstim and the vitamin Evitsel was proved. The use of the immunostimulant and vitamin improves the oxidation–reduction reactions of the turkey organism, which ultimately leads to an increase in the intensity of growth. Inclusion of immunostimulant and vitamin in the schemes of prevention turkey disease was influenced on the leukocyte blood formula of turkey. In the blood of bird of experimental groups there was an increase in the content of basophils, eosinophils, monocytes and a slight decrease in lymphocytes and neutrophils compared to those in the blood of bird in the control group. It should be noted that the decrease in lymphocytes and neutrophils in the blood is also due to the age of the turkeys of all the experimental groups. In the blood of the turkeys of experimental groups there was a decrease of platelets both due to age and when studied drugs were included in the feed.

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Keywords: drug Avestim™, Evitsel, turkeys, erythrocytes, hemoglobin, leukocytes.

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Concentration of peroxidation products and activity of antioxidant system in cows of 5–6-year age under influence of humilide and selenium (p. 89–92)

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Formulation of the problem. The article presents the data of research on the influence of biologically active substances on metabolic processes in the organism of cows. The studies were conducted on cows of Ukrainian meat breed in a 5–6 year old recovery. It is known that in this compensation the intensity of exchange reactions in the body decreases in animals, the level of peroxidation processes increases.

Purpose of work. According to the data, the ration of cows was deficient in Selenium. There was also an increased content of peroxide lipid products – malonic dialdehyde and diene conjugates and a decrease in the activity of enzymes of the protective antioxidant system.

Results of the study. The influence of humic drug Humilide in combination with the Selenium microelement on the activity of antioxidant enzymes and the level of products of lipid peroxidation in cows aged 5–6 years was studied.

It was proved that the addition of Humilide along with Selenium in the amount of 0,05 mg of dry matter for 21 days promotes an increase in the activity of enzymes of lipid peroxidation – catalase, glutathione peroxidase and glutathione reductase in the blood. The catalase activity in the blood of the experimental group cows increased by 36,8 % ($p < 0,001$), glutathione peroxidase – 49,7 % ($p < 0,001$) and glutathione reductase – by 19,1 % ($p < 0,05$). This is due to the fact that Selenium enters the active center of glutathione-dependent enzymes (glutathione peroxidase and glutathione reductase), which contributes to the synthesis of these enzymes. Thus, the protective properties of the body's antioxidant system increase. In this regard, the level of both diene conjugates – primary products of peroxidation and malonic dialdehyde – a secondary product, respectively, decreased by 27,5 % ($p < 0,001$) and 34,6 % ($p < 0,001$).

Conclusions. Thus, it can be said that the addition of biologically active substances in the form of the complex Humilide + Selenium has a polish effect on the activity of the antioxidant system, which is manifested in the increase in the activity of antioxidant enzymes and in the level of lipid peroxidation products.

Keywords: cows, antioxidant enzymes, glutathione peroxidase, glutathione reductase, catalase, lipid peroxidation products, malonic dialdehyde, diene conjugates.

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Problems of the use of methods of cell regenerative therapy in veterinary clinical practice (p. 93–96)

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The experimental study of the properties of mesenchymal stem cells (MSCs) of animal origin and the development of methods for their use in veterinary cell regenerative therapy are continued in the NUBiP of Ukraine for 11 years and are conducted in accordance with the "General Ethical Principles of Animal Experiments", approved by the National Congress on Bioethics (20.09.04, Kyiv, Ukraine) and the provisions of the "European Convention for the Protection of Vertebrate Animals Used for Experimental and Other Scientific Purposes" (Strasbourg, 1987). Developed methods (according to the requirements of international protocols) obtaining MSCs with high proliferative capacity from animals of different species; the safety of the application of allogeneic MSCs for the restoration of the structure and function of pathologically altered tissues of the musculoskeletal system, of the skin, of the internal organs of animals (liver, kidney, pancreatic and thyroid gland) has been proved. 20 patents were obtained, more than 80 scientific works were published, 1 doctor's and 5 candidate's theses were defended, the Center for Cell Technologies in Veterinary Medicine was created. Experimental studies continue.

The responsible stage of the clinical trials of the effectiveness and safety of cellular drugs and cellular technology products is coming in, as well as the introduction into the veterinary service of the proposed system of their use for therapeutic purposes, which makes it possible to reduce the cost of treatment for animals and make this method more accessible to consumers of veterinary services.

Keywords: veterinary medicine, transplantation, stem cells, development of cell technologies.

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Autoreinfusion of ascitic liquid in treatment of dog with complicated ascites portal hypertension (p. 97–100)

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The development of effective treatments for dogs with ascites is very relevant, since recently there is a marked increase in the number of sick animals with this pathology. The urgency of the problem

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of treating dogs with complicated ascites portal hypertension seems to be quite significant at present. Also, recently there is a lack of scientific works and developments devoted to the treatment of dogs with complicated ascites portal hypertension, which suggests a weak development of this problem.

Conservative methods for treating dogs with complicated portal hypertension are largely ineffective because hypoproteinemia always accompanies a portal hypertension syndrome that requires additional albumin injections, while ascites contain a high albumin concentration.

Using donor plasma can cause allergic reactions in these patients. The use of the same albumin and similar protein preparations is quite costly, while in the ascites fluid contains a significant amount of plasma protein (from 15 to 35 g/l), amino acids, electrolytes, hormones, enzymes, and vitamins, and it is a completely biochemically compatible plasma substitute. The positive effect of asteroid fluid autoreinfusion may be due to the return of native protein, which positively affects the dynamics of clinical symptoms and the protein balance. Since only conservative methods for treatment of animals in the ascites are not effective, it is rational to supplement their return of ascites to the body to reduce the development of hypoproteinemia. Therefore, testing of autorefusion of ascites in treatment of dogs with complicated ascites by portal hypertension is unmistakable. Since only conservative methods for treatment of animals in the ascites are not effective, it is rational to supplement their return of ascites to the body to reduce the development of hypoproteinemia. Therefore, testing of autorefusion of ascites in treatment of dogs with complicated ascites by portal hypertension is unmistakable. The purpose of our study was to find out the effectiveness of autoreinfusion of ascites in the treatment of dogs with portal hypertension complicated by ascites. The method of autorefusion of ascites was tested on 5 dogs aged 5 to 11 years (different breeds – bolonka, cocker spaniel, Staffordshire Terrier, German shepherd dog and dachshund), with a body weight of 8 to 41 kg. All dogs were given a preliminary diagnosis – portal hypertension, complicated by ascites.

After autoreinfusion, no complications were observed. The proposed method of autorefusion of ascites fluid is technically easy to perform, can be reproduced in each veterinary clinic, which has an operating room. In order to prevent complications, it is necessary to strictly adhere to the aseptic technique and the technique of holding the puncture, to correctly determine the mode of infusion. That is, there is every reason to consider autoreinfusion ascitic fluid an effective, simple, affordable palliative method of treating ascites.

Keywords: treatment, dogs, portal hypertension, autoreinfusion, hypoproteinemia, albumin, ascites, donor plasma, plasma protein, protein balance, approbation.

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Transaminase activity in serum of newborn calves different biogeochemical areas (p. 101–104)

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Formulation of the problem. The paper presents new data on the activity of transaminases in the blood serum of newborn calves obtained from cows from different biogeochemical zones and provinces. The work carried out during the 2015–2016 biennium. At the department of physiology, pathophysiology and immunology National Agriculture University of Ukraine. To accomplish this goal were conducted five series of studies in the farms of different biogeochemical provinces of Ukraine. The experiment was carried out on Holstein breed cows aged 5–6 years. According Clinical examination of animals were selected in each sector 10 animals with clinical signs and microelementosis clinically healthy. Diagnosis put on the basis of clinical and laboratory research. The material for research was the blood of newborn calves (derived from jugular vein) from 5 animals from each group. In serum, the activity of aspartate and alanine aminotransferase was determined by generally accepted methods. **Materials and research methods.** The conducted researches have determined that the activity of AST in blood serum of newborn calves of different biogeochemical provinces is significantly different. In particular, the activity of enzymes

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in animals in the northeastern and western biogeochemical zones is higher on average by 6,8 % than in animals from certain provinces of the southern zone. Instead, the activity of ALT in animals from a separate province of the southern zone (Donetsk region) is higher by 6,7–15,1 % than in animals from other provinces.

Results of the study. The analysis of the results of the experimental studies indicates that the activity of AST in the blood serum of newborn calves obtained from cows with signs of microelementosis is significantly lower than that of healthy calves, by 24–40 % ($p < 0,001$) depending on the biogeochemical province. It should be noted that the lower activity of the enzyme in the blood serum of calves was observed in animals from the northeastern (by 40,1 %, $p < 0,001$) and a separate province of the southern biogeochemical zone (Donetsk region), respectively, by 37,7 % ($p < 0,001$) than in healthy animals.

It has been established that calves born of cows with clinical signs of microelementosis have an activity of ALT in serum somewhat lower than healthy animals. In particular, the activity of ALT in the blood serum of calves obtained from wild cows with signs of microelementosis in the western and Donetsk region of the southern biogeochemical zone is lower by 15,9 % ($p < 0,05$) and 28,2 % ($p < 0,001$), according to indicators Healthy animals. In calves from other biogeochemical zones and provinces, the activity of enzyme showed only a tendency to decrease.

Conclusions. The two-factor dispersion analysis showed that the activity of ALT in blood serum of calves was not related to the biogeochemical zone or province of existence ($F = 0,988 < F_U = 2,61$; $p = 0,425$). Instead, the activity of ALT reliably depends on the biogeochemical zone or province of existence of animals – $F = 3,1 > F_U = 2,61$; $P = 0,028$.

The deficiency or excess of trace elements in the blood of the cows for 10 days prior to calving caused a decrease in the protein metabolism in the body of newborn calves. Significant influence of calves' microelement status on the activity of aminotransferases in their blood serum was found ($F = 23–25 > F_U = 4,08$; $p = 1,01–2,02E-05$).

Keywords: newborn calves, AST, ALT, microelementosis, biogeochemical areas.

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Relationship between cortisol level in pig's blood and activity of antioxidant defense system under technological stress (p. 105–108)

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The results of studies the relationship between the intensity of lipid peroxide oxidation, activity of antioxidant defense system and cortisol level in pigs blood serum under technological stress are shown.

Found that decrease of antioxidant defense system activity under technological stress is interconnected with cortisol level in animal's blood. Thus, within five days after exposure to stress factor there is gradual establishment of the relationship between activity of antioxidant defense system enzymes and cortisol level in blood. In particular, found the inverse correlation between the activity of superoxide dismutase – $r = 0,86$ ($p \leq 0,001$), catalase – $r = 0,82$ ($p \leq 0,001$), glutathione peroxidase – $r = 0,76$ ($p \leq 0,001$), and glutathione reductase – $r = 0,96$ ($p \leq 0,001$) with cortisol level in animal's blood serum.

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Technological stress is accompanied by increase content of lipid oxidation products in porcine red blood cells, in particular, the content of TBA-active products increases by 49,3–90,8 % ($p \leq 0,001$). With the increase of cortisol level in blood (in 2,3–2,7 times; $p \leq 0,001$) within 24 hours received significant direct correlation between the content of lipid oxidation products and cortisol level ($r = 0,53-0,74$; $p \leq 0,01-0,001$), which until the 5-th day after exposure to stress factor increases only. Thus, the correlation coefficient of serum cortisol level in pigs with content of TBA-active products, diene conjugates, ketodienes and Schiff bases was respectively – $r = 0,93$ ($p \leq 0,001$), $r = 0,80$ ($p \leq 0,001$), $r = 0,92$ ($p \leq 0,001$) and $r = 0,80$ ($p \leq 0,001$).

Conclusions. Therefore, technological stress is accompanied by the appearance and amplification of inverse correlations of cortisol level in pig's serum with the activity of antioxidant defense system enzymes and direct correlations with the content of lipid peroxide oxidation products in porcine red blood cells.

Keywords: cortisol, antioxidant defense system, lipid peroxidation, pig, stress, correlation.

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Characteristics and properties of Mycobacterium bovis strains differences in aspects (p. 109–114)

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The strain is defined as "a genetically homogeneous culture of microorganisms with the same morphological characteristics and biological properties, isolated from a certain source and maintained in the crops." Bacteria and viruses of the same species may have significant strain differences.

But, it is sometimes not clear enough how to identify and evaluate microorganism cultures with altered features, properties derived from the source strain for transplantation through artificial nutritional medium or macroorganism.

But sometimes not quite clear how to identify and evaluate the culture of microorganisms with altered characteristics, properties, derived from the original strain that through of the the nutrient artificial medium pass or by macroorganism.

on the basis of the biological cycle of *M. bovis* in the dynamics of multiple pass by nutrient artificial medium strain differences justify certain morphological forms of microorganisms.

Substantiate on the basis of the biological cycle *M. bovis* in the dynamics of multiple passage through an artificial environment the differences of definite morphological forms of microorganisms.

In the long-term work, a virulent strain of *M. bovis* isolated from biological material of the cow was investigated. In the dynamics of 240 passages, the main biological properties of mycobacteria, their lipid composition according to traditional methods of veterinary medicine were studied.

Accented that it is necessary to evaluate the biological properties of a specific subculture of microorganisms for determining the strain, especially in the dynamic biological cycle of development. It is argued that certain periods of development the morphological forms of have specific biological properties that affect the characteristics of strain.

Some aspects of the biological properties of the mycobacterium of the bovine species, investigated in the dynamics of passes through an nutrient medium, the organism of guinea pigs

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testify to the diversity and complexity characteristics of strain.

Strain differences are determined by the specific biological properties of a particular population, the race of mycobacteria (microorganisms) of the subculture, regardless of the source from which they are derived.

Keywords: strain, tuberculosis, mycobacterium, L-form, dissociation, biological cycle.

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Increasing natural resistance and immunological reactivity of puppies at adding to their basic ration of animal supply of humin nature (p. 115–120)

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The results of the study of dynamic changes in hematological indices and the establishment of sensitization by the body in the body of domestic animals based on the action of the feed supplement of humic nature "Humilid" are presented. It is known that feed additives of humic nature are metabolized and have a polyfunctional effect on the organism of animals, since they possess high adaptogenic properties, maintain immune status and take an active part in the regulation of metabolism. It was found that the most pronounced changes in the use of the biologically active feed supplement of humic nature of Humilid related to the content of total protein and γ -globulin fraction. Thus, in animals of the experimental group, the amount of γ -globulin before the addition of an additive to their diet was on average $9,9 \pm 1,45$ % of the total protein, and after three weeks, this figure increased to $15,53 \pm 1,44$ % (difference 5,63 %). In the control group at the beginning of the experiment, the number of γ -globulin was $11,3 \pm 2,41$, and after three weeks $13,90 \pm 0,18$ (difference 2,63 %). That is, for the use of the biologically active substance humic

nature, an increase in the level of γ -globulin in the blood of animals in the experimental group is on average 3 % relative to the control. At the same time, this dynamics is recorded by the indexes of albumin content, $\lambda 1$ -globulins, $\lambda 2$ -globulins, β -globulins. It is established, adding to the basic diet of domestic animals biologically active feed supplement humic nature "Humilid" does not cause sensitization of the organism to the constituent of the active substances of the feed supplement. Inclusion in the main pet's diet Humilid, on the contrary, has a desensitizing effect, as evidenced by a decrease in the number of eosinophils in the blood of experimental animals. The main quantitative changes in the blood cell population, due to the action of the biologically active feed supplement of humic nature Humilid, is associated with the cell line of the innate immunity of the organism, as evidenced by an increase in the total number of granulocytes and monocytes.

Keywords: dogs, biologically active feed additive of humic nature "Humilid", sensitization, natural resistance, immunological reactivity.

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